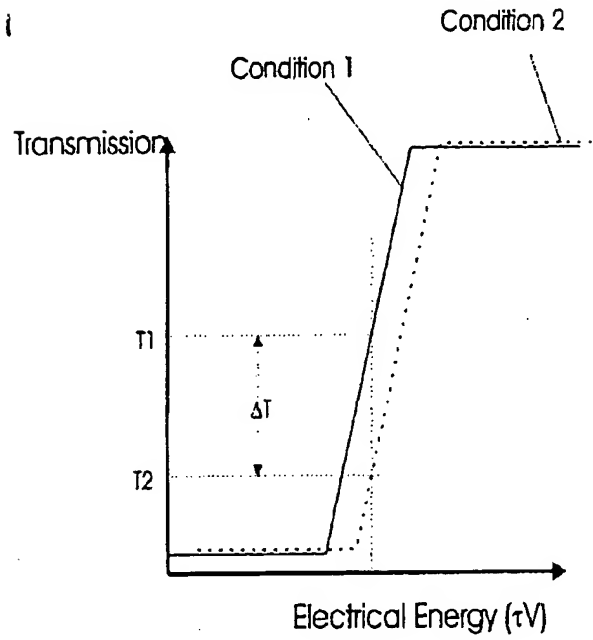


1/14

FIG 1



2/14

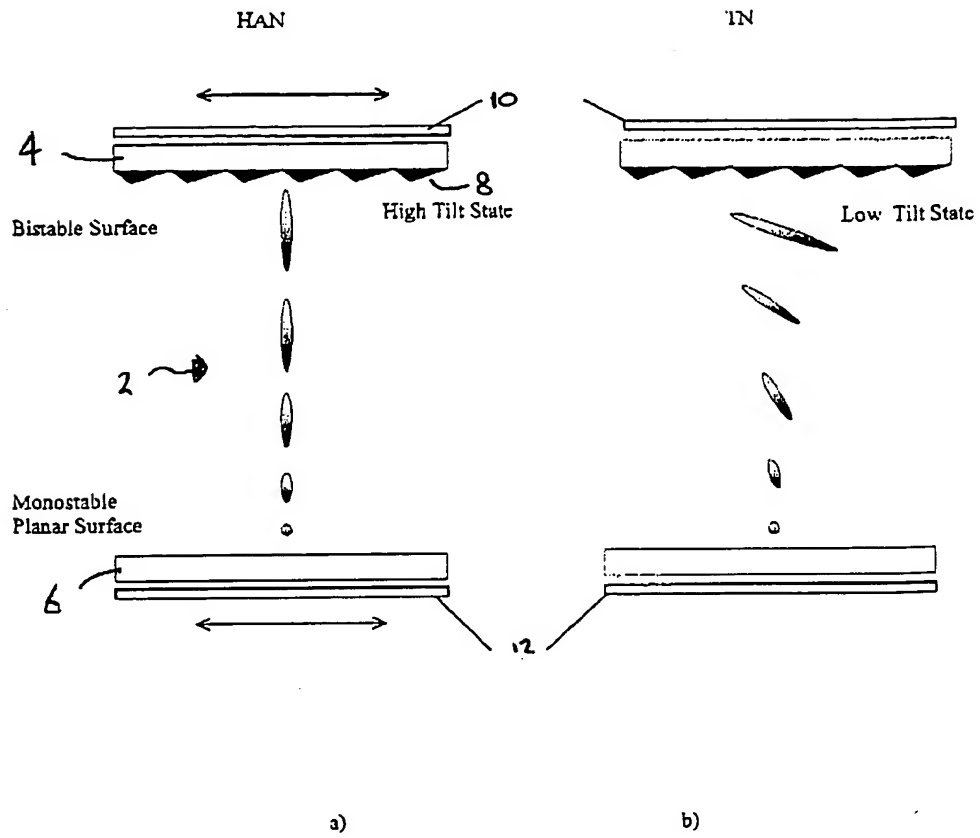


Figure 2.

3/14

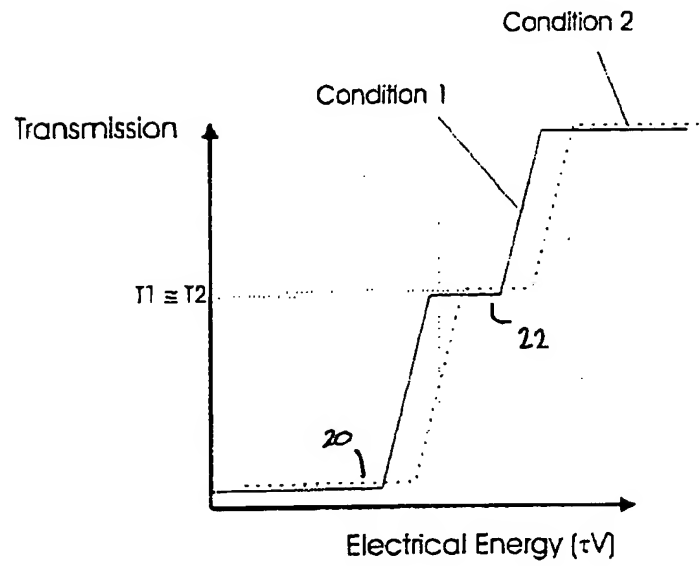


Figure 3.

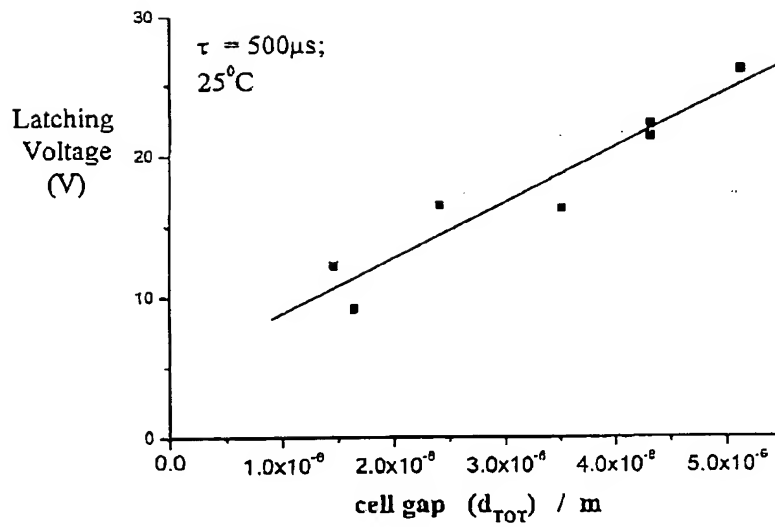
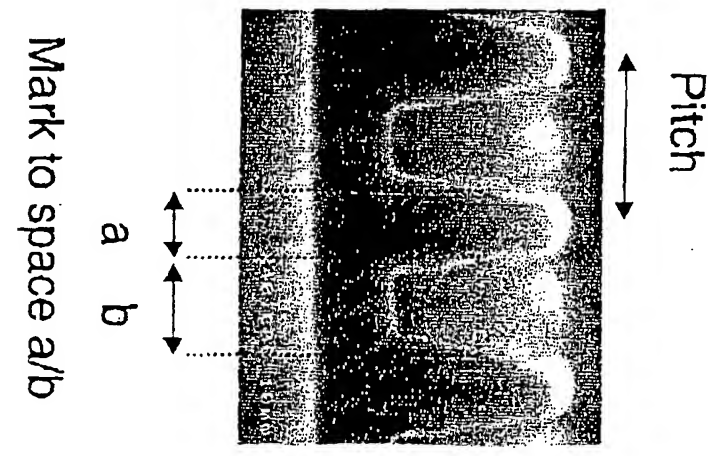
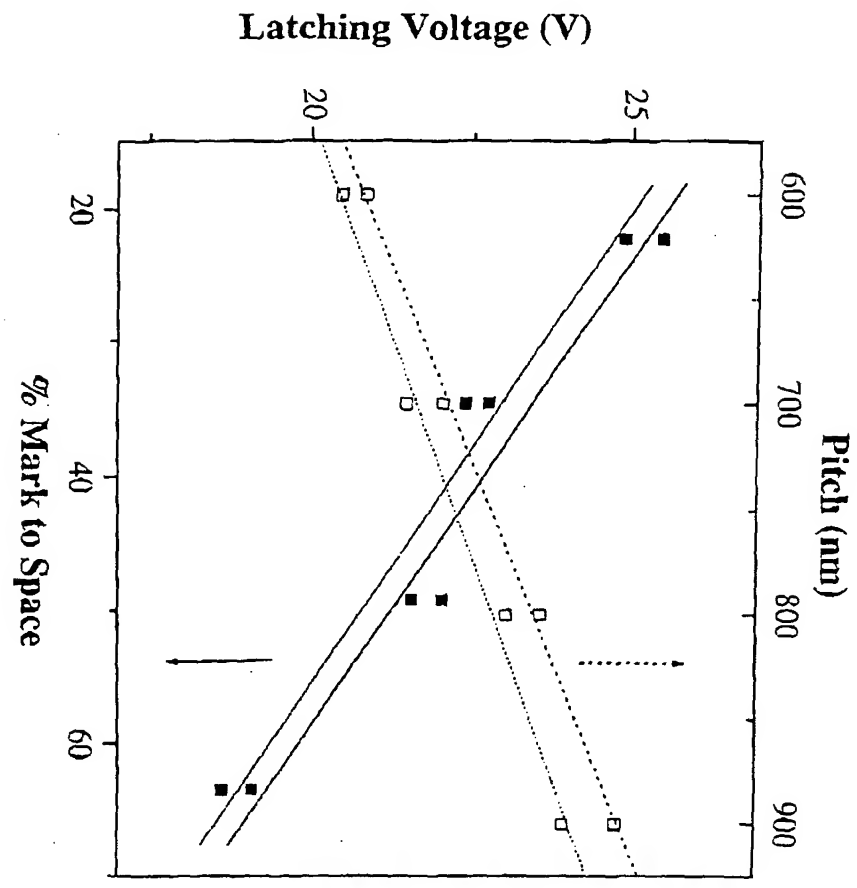


Figure 4.

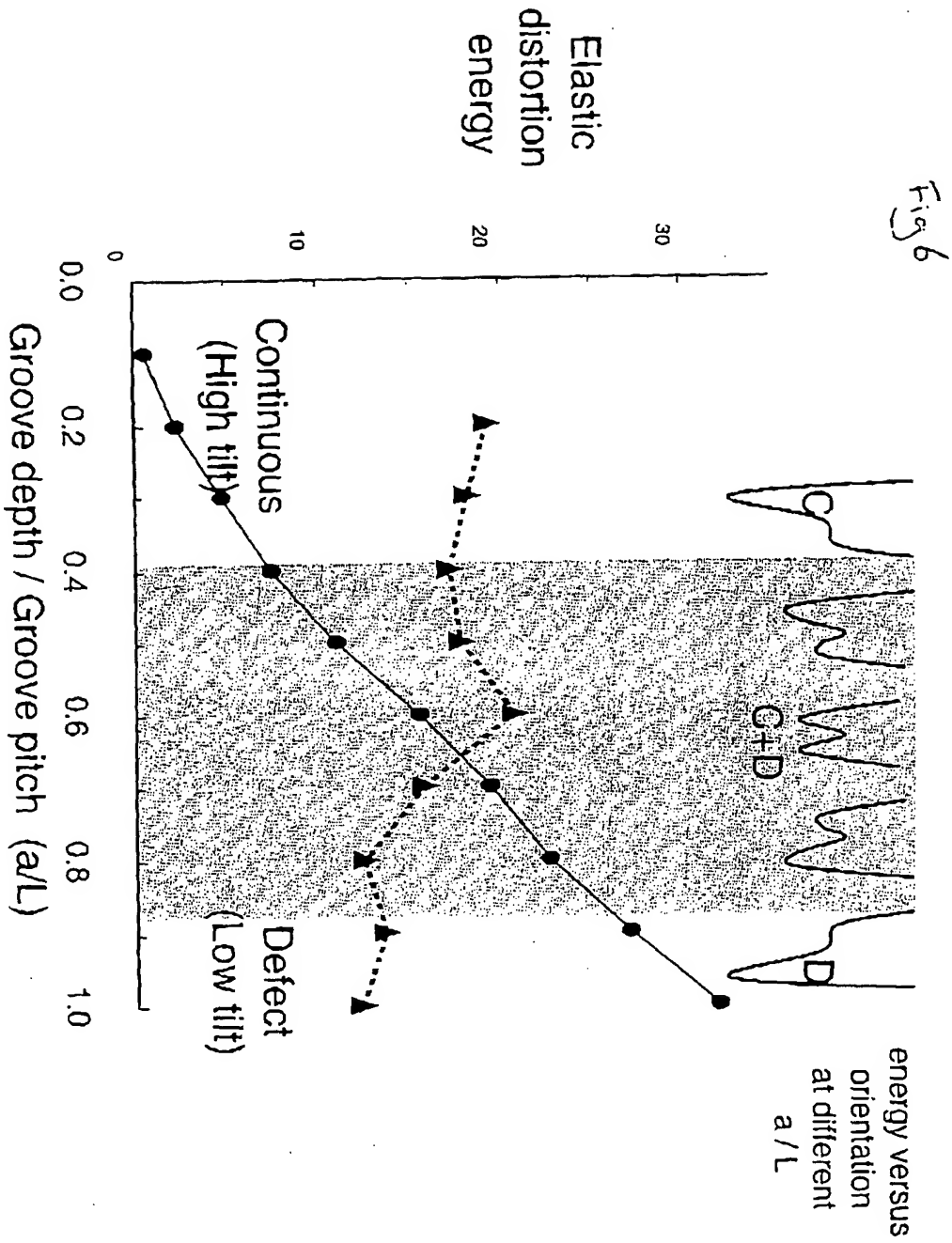
4/14

Fig 5



S/14

Grating shape and latching threshold



6/14

FIG 7

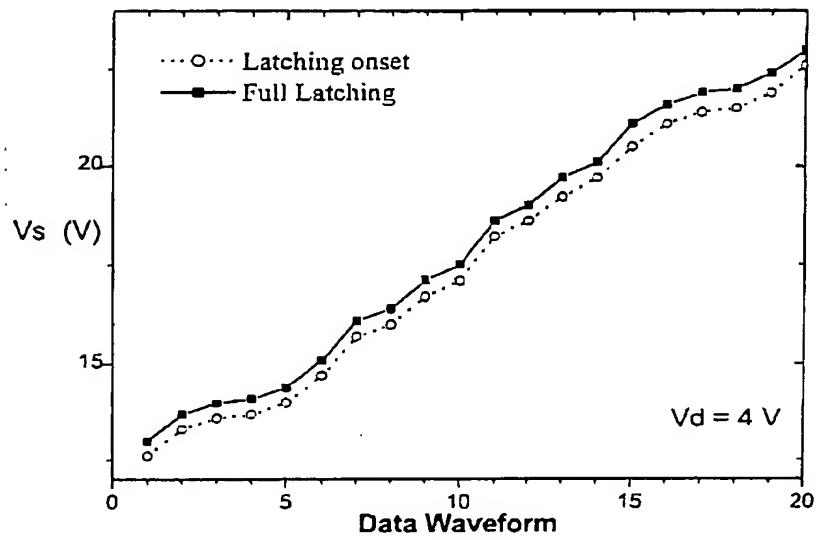
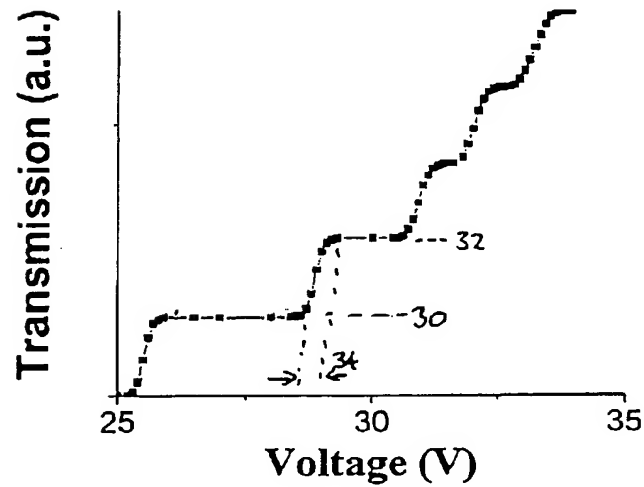
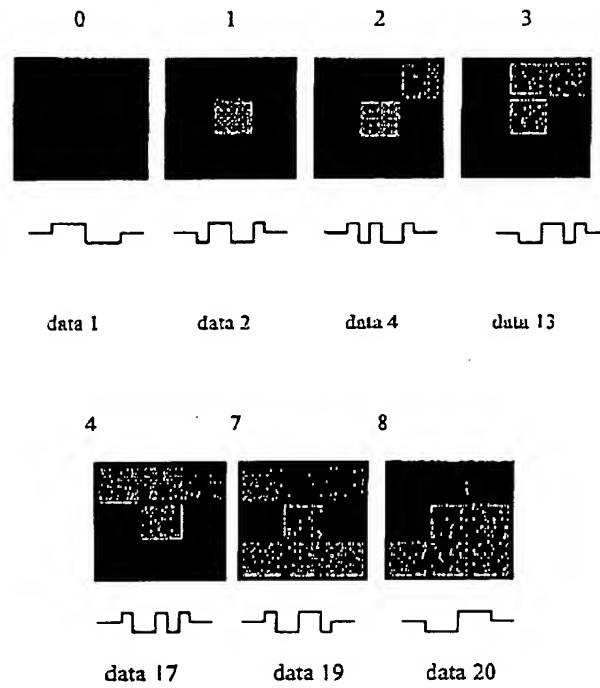


FIG 8



7/14

Fig 9



8/14

Figure 10 The basic principle of patterned grids.

	A				B				C				
	1	2	3	1	2	3	1	2	3	1	2	3	1
	2	3	1	2	3	1	2	3	1	2	3	1	2
	3	1	2	3	1	2	3	1	2	3	1	2	3
	1	2	3	1	2	3	1	2	3	1	2	3	1
	2	3	1	2	3	1	2	3	1	2	3	1	2
	3	1	2	3	1	2	3	1	2	3	1	2	3
D	1	2	3	1	2	3	1	2	3	1	2	3	1
	2	3	1	2	3	1	2	3	1	2	3	1	2
	3	1	2	3	1	2	3	1	2	3	1	2	3
	1	2	3	1	2	3	1	2	3	1	2	3	1
E	2	3	1	2	3	1	2	3	1	2	3	1	2
	3	1	2	3	1	2	3	1	2	3	1	2	3
	1	2	3	1	2	3	1	2	3	1	2	3	1
	2	3	1	2	3	1	2	3	1	2	3	1	2
	3	1	2	3	1	2	3	1	2	3	1	2	3
	1	2	3	1	2	3	1	2	3	1	2	3	1

1	3	4	2	1	2	4	3	1	3	4	2
2	1	3	4	3	1	2	4	2	1	3	4
4	2	1	3	4	3	1	2	4	2	1	3
3	4	2	1	2	4	3	1	3	4	2	1
1	2	4	3	1	3	4	2	1	2	4	3
3	1	2	4	2	1	3	4	3	1	2	4
4	3	1	2	4	2	1	3	4	3	1	2
2	4	3	1	3	4	2	1	2	4	3	1
1	3	4	2	1	2	4	3	1	3	4	2
2	1	3	4	3	1	2	4	2	1	3	4
4	2	1	3	4	3	1	2	4	2	1	3
3	4	2	1	2	4	3	1	3	4	2	1

Figure 11

9/14

1		1		1	
	3		3		3
2		2		2	
	1		1		1
3		3		3	
	2		2		2
1		1		1	
	3		3		3
2		2		2	
	1		1		1
3		3		3	
	2		2		2
1		1		1	
	3		3		3
2		2		2	
	1		1		1
3		3		3	
	2		2		2

1		2		3	
	3		1		2
2		3		2	
	1		2		3
3		1		3	
	2		3		1
1		2		1	
	3		1		2
2		3		2	
	1		2		3
3		1		3	
	2		3		1
1		2		1	
	3		1		2
2		3		2	
	1		2		3
3		1		3	
	2		3		1

Figure 12 Examples of super structures used for 4 analogue grey levels.

10/14

Figure 13

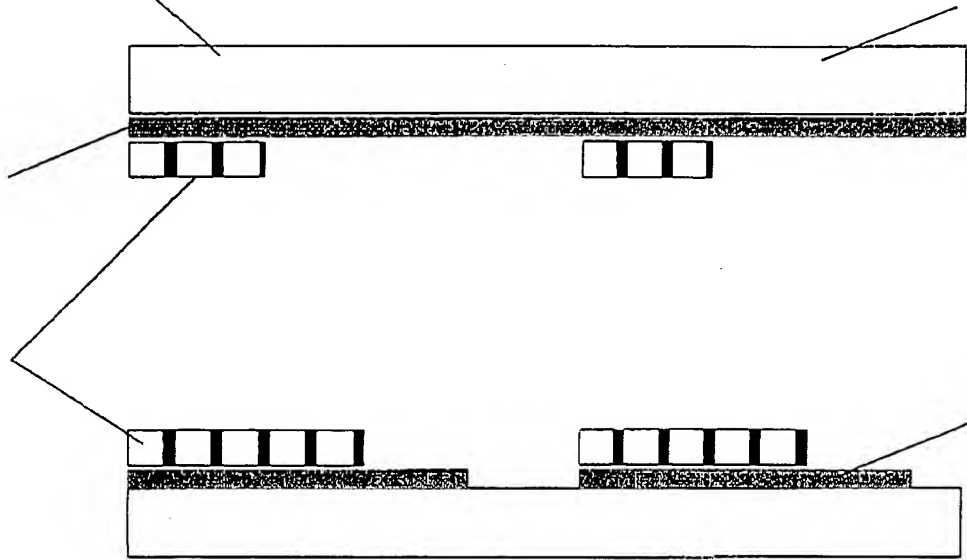
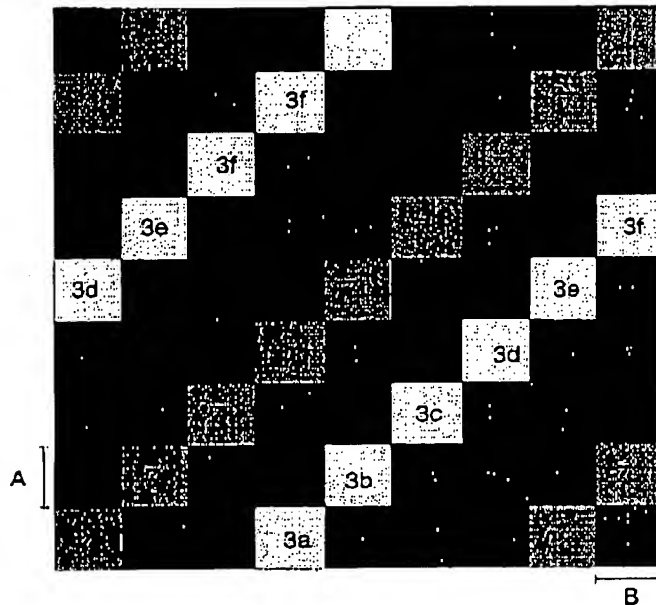


Figure 14

A	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1
	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1
	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2
	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1
	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1
B	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2
	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1
	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1
	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2
	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1
C	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1
	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2
	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1
	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1
	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2

11 / 14

Figure 15a



Grid Structure:
Comprising 7 different pitches
Pitch 1=1200nm
Pitch 2=1100nm
Pitch 3=1000nm
Pitch 4=900nm
Pitch 5=800nm
Pitch 6=700nm
Pitch 7=600nm

Equal mark to space
Pitch 1=600nm chrome 600nm gap
Pitch 2=550nm chrome 550nm gap
Pitch 3=500nm chrome 500nm gap
etc

Horizontal repeat unit 49 squares
with 1 square translation between
successive rows.
This is due to corrections for
imperfect 4.8micron gridding

Each Grating Length A=4.8microns

Each grating width is tiled to fit a whole number of grooves, however in order to rebalance the area dimension B expresses the width of the grating regions:

Pitch 1: 4 whole pitches B=4.8microns

Pitch 2: 2a 4 whole pitches B=4.4microns

2b 5 whole pitches B=5.5microns

2c 4 whole pitches B=4.4microns

2d 4 whole pitches B=4.4microns

2e 5 whole pitches B=5.5microns

2f 4 whole pitches B=4.4microns

2g 4 whole pitches B=4.4microns

Pitch 3: 3a 5 whole pitches B=5.0microns

3b 5 whole pitches B=5.0microns

3c 5 whole pitches B=5.0microns

3d 5 whole pitches B=5.0microns

3e 5 whole pitches B=5.0microns

3f 4 whole pitches B=4.0microns

3g 5 whole pitches B=5.0microns

Pitch 4: 4a 5 whole pitches B=4.5microns

4b 5 whole pitches B=4.5microns

4c 6 whole pitches B=5.4microns

4d 5 whole pitches B=4.5microns

4e 5 whole pitches B=4.5microns

4f 5 whole pitches B=5.4microns

4g 5 whole pitches B=4.5microns

Pitch 5: 6 whole pitches B=4.8microns

Pitch 6: 6a 7 whole pitches B=4.9microns

6b 7 whole pitches B=4.9microns

6c 7 whole pitches B=4.9microns

6d 7 whole pitches B=4.9microns

6e 6 whole pitches B=4.2microns

6f 7 whole pitches B=4.9microns

6g 7 whole pitches B=4.9microns

Pitch 7: 8 whole pitches B=4.8microns

Error row a: -0.4 microns

Error row b: +0.7microns

Error row c: +0.5microns

Error row d: -0.4microns

Error row e: +0.0microns

Error row f: -0.5microns

Error row g: -0.4microns

Fig 15b



Each grating width is tiled to fit a whole number of grooves, however in order to rebalance the area dimension B expresses the width of the grating regions: widths for individual labelled areas identical to area 3 (pattern 7) but as stated above regions have been reordered.

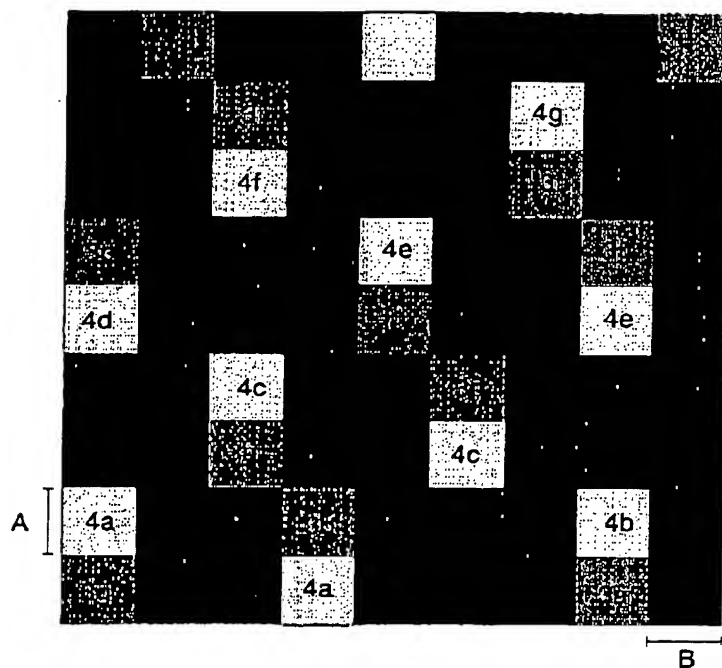
Pitch 7=600nm

Pitch 3=500nm chrome 500nm gap
etc

This is due to corrections for
imperfect 4.8micron gridding

13/14

Fig 15c



Dimensions of regions (2a etc) identical to those written down for Area 3. However again the layout of regions is swapped around.

Horizontal repeat unit 49 squares
with 1 square translation between
successive rows.

Row1: 1 2 4 6 7 5 3

Row 2: 1 3 5 7 6 4 2

Row 3 same as row 1

Row 4 same as row 2 etc

14 / 14

Figure 16

